THE DELAWARE AND HUDSON COMPANY BULLETIN

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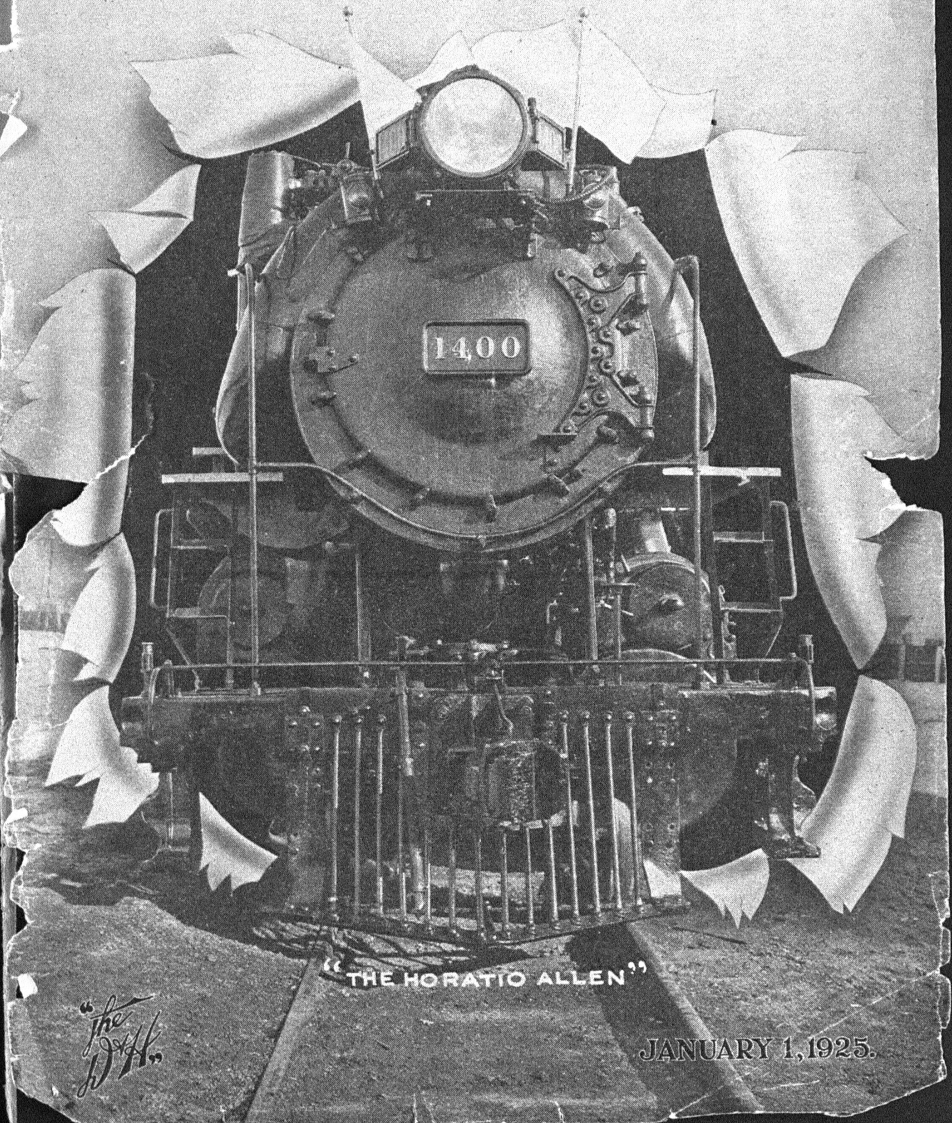

“THE HORATIO ALLEN”

“the D&H”

JANUARY 1, 1925.

APPRECIATING the desirability of placing before its employes information having to do with the Transportation Industry, the Management of The Delaware and Hudson Company started, early in 1921, the issuance of "THE BULLETIN" which has since been known as our semi monthly employes' publication. Except with one change in form, The Bulletin has continued as an eight-page paper up to the present time. Need for additional reading space and a volume of more convenient size has been apparent for some time and, in response to this demand, a larger Bulletin makes its debut with this issue. It will permit of a more diversified arrangement of topics and will merit continued interest.

The
DELAWARE AND HUDSON COMPANY
BULLETIN

Vol. 5 Albany, N. Y., January 1, 1925 No. 1

Fifty Years at Carbondale

Thomas Griffin Smith, Former Freight Agent, Has Interesting Railroad Career That Dates Back to Gravity Days

BORN in a modest home situated within the shadows of a railroad trestle, reared in the environments of a railroad center, and trained throughout his business life, a period of forty-nine years and three months, in the service of The Delaware and Hudson Company, is a quick summary to date of the career of THOMAS GRIFFIN SMITH, formerly of Carbondale, Pa., now residing in the 16th Street Mansions, 16th and R Streets, N. W., Washington, D. C. He was pensioned May 1, 1922.

THOMAS GRIFFIN SMITH

But there is considerable more to his story than the foregoing epitome. To be more explicit, he was born in Dundaff street, Carbondale, in a house that stood just beneath the site of the present New York, Ontario and Western passenger station, August 18, 1854. As a boy, he attended the public schools in his immediate neighborhood and in May, 1871, a few months before his seventeenth birthday, he was sent to Hutton Hall Academy, Dumfries, Scotland, birthplace of Sir James Barrie's inspirations for his play, "Peter Pan," where he pursued a special course of study for a year and a half. This concluded his education so far as schools were concerned.

Prior to his trip abroad, he had become a railroad man. That is, in 1869 he had secured temporary employment in the framing department at the local gravity shops. While there he personally painted the first and only gravity coal car to be so decorated. Red mineral paint was the body coloring used, while the trucks were smeared with coal tar. The men who followed the rails in that day were very proud of the brilliantly colored little car and, in expression of such sentiments, they nicknamed it the "Red Rover." Later, with Henry Baker, he was charged with the re-weighing of the gravity coal cars. A track scale was installed at the "switchback," near the foot of No. 3 plane, light track, and there the cars to be re-weighed were set off. To show that they had been so checked, they were marked with a spot of white paint, about an inch in diameter, on the side center stud. This was done by pressing a stencil brush and twisting it sharply upon the stud. The average weight of the cars was between five and six thousand pounds. During the following year, 1870, he ceased his relations with the Company to resume his studies.

The day on which he began his long and continuous railroad career, was February 1, 1873. This later proved to have been a very auspicious occasion for him, indeed. Beginning as a clerk in the freight house at Carbondale, he rose by one step and another until he received an appointment as the local freight agent in 1877. For twenty-seven years, or until October 1, 1904, he continued in that position.

On July 1, 1906, he was appointed chief clerk to H. E Gilpin, then superintendent of the Pennsylvania division, continuing in that capacity until Novmber 1, 1917, when he returned to the freight house in Carbondale, as demurrage clerk. There he remained until May 1, 1922 when, after nearly a half century of service that was unbroken, he was pensioned by the Company. It is worthy of note here to mention that during all of those years many of our former, and some of our present officials served their apprenticeship under his kindly and courteous direction.

In recalling some of the customs and practices of the earlier days on The Delaware and Hudson, he mentions the breaking of all bulk freight passing between our lines and those of the Erie due to the differences in gauges at Carbondale. The freight house there was very small, indeed, in those days and, as he recalls, only two men comprised the force on the platform, while the agent and one clerk constituted the office force. Rollin Manville was the division superintendent.

While engaged as chief clerk, the office of division superintendent had three occupants, namely, Messrs. Gilpin, Burr and **MORGAN**, the latter now, after an absence from the service for a period of several years during which time he was engaged in the banking business, back in his old position. During the whole of his service, which was given to one department and at one point, he was employed under six different superintendents.

Thirty-nine years ago, or on December 10, 1885, he married Estella Helena Tralles, daughter of Mr. and Mrs. Robert Tralles of Breslau, Germany, late of Carbondale, Pa. To them two sons and a daughter were born—Winfield, Kenneth and Jennie—and they in turn entered the employ of the Company, serving in the freight and accounting departments and the superintendent's office at Carbondale. Their total service aggregated twenty years, Both young men served in the military service during the late war and at present one is engaged in business in the Nation's Capital and the other is a member of Edith Day's "Wildflower" company. The daughter, now Mrs. A. O. White, resides in Bethlehem, Pa.

Immediately following his retirement and after sixty-eight years of residence in the city of his birth. he and Mrs. Smith emigrated to Washington, D. C, there to make their home. Both are hale and hearty today and were you to pass him on the street you would regard him as a man but slightly past fifty. In meeting and talking with him. it is difficult to realize that he spent five decades in the service of the Company.

He is a member of The Delaware and Hudson Veterans' Association and an attendant at Epiphany Episcopal Church in Washington. He has never been affiliated with any fraternal organization.

Out Along the Line

The fourth annual meeting of The Delaware and Hudson Freight and Ticket Agent's Association will be held in Room 408, General Office Building, Albany, at 10 a. m., Monday, January 19. Officers for the ensuing year will be chosen and other matters of importance will be considered.

* * *

The First Quarterly meeting of The Delaware and Hudson Veterans' Association for 1925, at which the annual election of officers will take place, will be held in Odd Fellows Hall, Albany, on Sunday, January 11, at 1 p. m. A special train for the accomodation of veterans residing south of Albany, will be provided. Those located north of Albany can use Train No. 122, leaving Whitehall at 8:20 a. m., and Train No. 15, leaving Albany at 4:45 p. m., on the return.

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The Delaware and Hudson Forty Year Club will have a reunion and entertainment in Albany during the latter part of January. Each of those who participated in last summer's pilgrimage through the historic "north country" of New York state will have the privilege of inviting ten guests. A travel lecture embracing Eastern Canada and the White Mountains will be a feature, and the Rev. Dr. W. P. Harmon of Ticonderoga, who helped to make the tour last summer such a success, will be one of the speakers.

* * *

CAPTAIN M. J. POWERS, our general passenger agent, recently returned from a tour of several European countries which he greatly enjoyed as a member of a party of traffic officers of American railways who sailed from New York on October 3, last. On their trip they were the guests of the trans-Atlantic steamship companies and of some of the managements of European railways. **CAPTAIN POWERS** is very enthusiastic over the many unusual experiences entering into such a trip and no doubt will incorporate some of the more interesting incidents in an article for the benefit of the readers of THE BULLETIN.

* * *

And, speaking of the sacredness of memories, it is not amiss to mention that **GEORGE MYERS** of Saratoga Springs, who ran as an engineer in passenger service between the Spa and Whitehall when he was but seventeen years old, on the day the Horatio Allen, No. 1400, was christened at Colonie, was inquiring for copies of THE BULLETIN of May 1, last, which contained a reproduction of the *Farewell*, a favorite locomotive during the early fifties. By this it is not inferred that **GEORGE** was not interested in the newer model, but, like many another veteran of the service, the old reliables still look good to him.

The "Horatio Allen" No. 1400

New Giant of the Rails is Christened in Honor of the Man Who Became the First Locomotive Engineer in This Country

HORATIO ALLEN

HORATIO ALLEN, the man who was at the throttle of the "Stourbridge Lion," the first locomotive to turn a wheel on this continent, on its initial trip at Honesdale, Pa., on August 8, 1829, and therefore became the first locomotive engineer in this country, lived again in the thoughts of 150 prominent railroad men from various neighboring lines and from our official family who were present at our Colonie shops on Thursday, December 4, when a new Delaware and Hudson locomotive, the No. 1400, was christened with his name. Allen, as our readers will recall, when but twenty-six years old, was sent to England by the Management of our Company, to purchase four locomotives. The "Stourbridge Lion" was one of these. It was highly fitting, therefore, that the Management, nearly a century later, should do honor to him after a custom prevailing during the years of his active railroad career, by imposing his name upon the cab of this new giant of the rails. Deeper interest than otherwise might have centered in this event was made possible by the presence, as sponsor, of Mrs. Harleston Corbett Lewis (Mrs. Russell D. Lewis), a granddaughter of Allen's.

Throughout the more formal exercises of the day, Allen was an outstanding figure. The son of a professor of mathematics at Union college, Schenectady, N. Y., and an engineer by profession, he was one of the first Americans to form a definite conviction that the railroad was to supply the transportation means of the future. It was while engaged as an engineer on the gravity road between Carbondale and Honesdale that he was delegated with his foreign mission.

Those who came to join with the Management in doing him honor, combined to make an auspicious gathering. Invitations had been extended not only to the presidents and superintendents of motive power of other rail systems, men of high rank in the supply business, representatives of leading railway publications and daily newspapers, and our own officials, but to a number of pensioned engineers and firemen who had seen unusually long service in the employ of the Company. Among the latter who attended were **John H. Stranahan** of Cherry Valley; **George H. Meyers** of Saratoga Springs; **Martin Gully** and Mrs. Gully of Whitehall, and **John T. Hines** of Green Island, former locomotive engineers; and C. F. W **Brandt** of Schenectady, a retired locomotive fireman. A special train was operated between Albany and Colonie for the accomodation of the guests.

Shortly after the arrival of the party at Colonie and without great ceremony, Mrs. Lewis christened the "Horatio Allen," in a manner according to a prevailing custom. Then followed a casual inspection of the locomotive during which many questions pertaining to its construction and operation were answered by those familiar with its design. Such replies as were made could be based on facts for the locomotive already had made a creditable showing in trial trips over the Susquehanna division between Oneonta and Mechanicville under the supervision of G. S. **Edmonds**, superintendent of motive power.

At 1 p. m., the guests assembled in an improvised dining hall at the shops where they were served with a tasty luncheon of bouillion, broiled chicken, creamed potatoes, new squash, Waldorf salad, rolls, apple pie and coffee prepared under the direction of J. T. **Hayden**, district passenger agent, who was ably assisted by a corps of dining car chefs and waiters The more formal program of the day then followed.

Colonel J. T. **Loree**, vice-president and general manager, as toastmaster, told his guests that the ceremonies had in view two purposes: First, to celebrate the placing in service of a type of steam locomotive heretofore unused, and, second, to do honor to the first engineer, so far as the operation of a steam locomotive in this country was concerned, Horatio Allen. Then, with the statement that it has always been the belief of the President of The Delaware and Hudson Company that steam locomotives could be designed and improved to perform their functions, he introduced **President** L. F. **Loree**, who said:

President Loree Voices Faith in Future of Unit System of Transportation

THIS occasion draws attention to two marked contrasts in the element of time. While the business of steam transportation is one of hazard, it is also one that appeals especially to men of active temperament and physical vigor. It is a pleasure to have here with us today men who have been on the payrolls of this Company for more than fifty years before retiring from active service to continue their relations as pensioners. On the other hand, we are faced with the startling youth of the industry itself when we realize that Horatio Allen came to this service in adult life with a training and an education that marked him among his fellows, and that today our ceremonies have been graced by Horatio Allen's granddaughter. A span of three generations embraces the entire history of steam transportation.

"When, more than a century past, The Delaware and Hudson Company secured its charter, a contest was arising between the rope haulage system of transportation and the independent unit system of transportation, and since that time the advantage has fluctuated, now with one and now with the other.

"When the Company built its railroad from Carbondale over the Moosic mountains to Honesdale, it used the rope haulage system on its twelve inclined planes. Over the so-called levels between the planes it moved its cars by the unit system; namely, horses, and, on descending grades of from forty-four to seventy-two and a half feet per mile, by gravity.

"At that time the steam locomotive was just being developed. On the recommendation of the chief engineer, John B. Jervis, the Company, with great courage, decided to test out that system of unit haulage. Horatio Allen, one of its engineers, was commissioned to go to England and contract for four locomotives. All of these were subsequently delivered on the Company's wharves at Kingston on the Hudson—one from the works of Robert Stephenson & Company, Newcastle, a company still in the business of manufacturing locomotives; the other three from the works of Foster, Rastrick & Company, of Stourbridge. One of these latter, the 'Stourbridge Lion,' was set up at Honesdale on the 8th of August, 1829, nearly two months before the celebrated Rainhill contest, and was operated by Horatio Allen, to whose name, character and professional ability we today do honor.

"The Liverpool and Manchester Railway early in 1829 employed James Walker of Limehouse, a distinguished engineer, and J. U. Rastrick of Stourbridge, a locomotive builder to report on the respective merits of the locomotive engine and fixed engine. Their report was generally, although not very decidedly, in favor of the rope haulage system. It was with a view to meeting the wishes of George Stephenson, their chief engineer, and to give the locomotive one more chance, so to speak, that the Company resolved to invite a competition for a prize of £500. The conditions were advertised in April, 1829, and the trial taking place in October, 1829. It was, as is well known, won by the 'Rocket,' the nineteenth locomotive built by the firm of Robert Stephenson & Company. The name 'Rocket,' by the way, grew out of a lawyer's sarcastic remark that 'People would as soon mount one of Colonel Congreve's rockets as one of these railway coaches.' George Stephenson was not the man to dodge anyone's attack.

"The success of the 'Rocket' was due to the combination of the tubular boiler suggested by Henry Booth, and an improved and suitably proportioned blast pipe, first used by Richard Trevithick in his original locomotive which had its first trial on Christmas Eve, 1801. The success of the 'Rocket' at Rainhill led to the rapid introduction of the unit system of haulage in all parts of the world, and it remains today the outstanding instrument of transportation.

"This is not the place to recount the service of steam railways to mankind. It is enough to suggest that they were the indispensable condition of the abolition of slavery and equally the means by which famines have been abolished. They made of a primitive agriculture a world commerce, they broadened in every way the comfort and security of life. They have made the civilized lands the mother countries of the world.

"On July 27, 1884, electricity was applied in the movement of street cars at Cleveland, Ohio, and came rapidly into use. This is, in essence, a rope haulage system. There is the great central power station; the dynamo, standing for the winding drum; and the trolley wire providing the circuit for the electric current, attaching to which the vehicle is drawn along. This system was so superior that it drove the individual unit system—the horse-drawn car—out of service and completely supplanted it in city and suburban transit.

"About 1898, with the application of the internal combustion engine to road vehicles, there began the development of the automobile. In its turn this individual transportation unit, whether used as a pleasure car, as a motor bus, or as a motor truck, has rapidly driven the suburban trolley lines and the city lines of meager traffic out of service, they being no longer able to preserve their financial solvency.

"There is the further possibility that even tomorrow a cheap, durable and fool-proof electric storage battery may be invented, enabling the use of its power by an independent unit in transportation, completing the discomfiture of the rope-haulage trolley car.

"While this contest may be expected to continue long in the future, perhaps usurping and stabilizing itself in restricted fields, the dominance in its larger aspect will depend largely upon the ability, genius, courage and tenacity of the exponents of one or the other method of transportation. For myself, I have an abiding faith that for the main purposes of the railroad—the transportation over long distances of heavy articles—the unit system of transportation will be the dominant one.

"The engine which has today been christened the 'Horatio Allen,' in honor of the man who ran the first locomotive on the Western hemisphere, is a step in the direction of insuring this position. The familiar self-contained type of multitublar boiler for steam locomotives, in combination with the superheater, has been retained. Instead of the usual water leg firebox with its undesirable flat sheets and staybolts, and the sluggish circulation of water, the firebox of the 'Horatio Allen' has been built up of self-supporting cylindrical structures. These are in the form of drums and tubes disposed horizontally and disposed vertically, requiring no stays, which are directly exposed to the furnace heat and which not only 'split up' the boiler water into small streams but also provide for its rapid circulation, thereby enabling quick absorption of heat and release of the steam bubbles.

"When water is burst into steam it expands to 1700 times its original volume. It is this high expansive force and the inverted ratio of its pressure to the space it occupies that we utilize in the locomotive engine. In working steam expansively the extent of the application depends mainly on the destiny and pressure of the steam drawn from the boiler.

"Liquid water, not under pressure, may be raised from melting to boiling point with no more than 180 units of heat, called 'sensible heat.' But its peculiarity is that it cannot be made to burst into steam until 970 more additional heat units have been added. This is called 'latent heat of evaporation,' and its production multiplies the cost almost five and a half times.

"This is the great cost in producing steam, whether of high pressure or of no pressure at all. It requires comparatively little additional heat to put steam under pressure. Thus, it takes about 1,150 heat units to raise water into steam at no pressure. But to raise it to 200 pounds pressure—which is now the general locomotive practice—requires only about forty-nine additional heat units. To further raise it to 350 pounds, and thus secure seventy-five per cent more power, requires less than seven and a half additional heat units. It is this new pressure of 350 pounds that will be carried by the 'Horatio Allen;' and it is the economy of producing additional power by raising the pressure of the steam that this locomotive will realize.

"To make this possible, the pressure-containing parts of the boiler, superheater, cylinders, piping and other connections have been correspondingly strengthened. In fact, a higher factor of safety has been used than is ordinarily provided.

"In order to limit to the lowest terms the problems involved, we have taken the most popular of our Consolidation locomotives. We have made no material changes other than those indicated, except that the steam is used twice, i. e., it is eypanded in a high pressure cylinder on the right side, then exhausted into a receiver, and expanded a second time in the low pressure cylinder on the left side, before it is exhausted into the stack. By this means the steam is more fully utilized before it leaves the cylinders.

"In the construction of this locomotive a small auxiliary engine, known as a 'booster,' has been attached to the tender. This device enables great concentration of power in starting the train and in moving it over comparatively short stretches of heavy grade. It is hoped that the 'Horatio Allen' will develop one-third more haulage capacity, with one-third less consumption of fuel and water, than the corresponding Consolidation locomotive. If these results are realized they mark a substantial advance in the efficiency of the unit system of transportation. Notwithstanding the greater heat in the boiler, the precautions taken in lagging its head will, we believe, reduce the temperature to which the engine crew is exposed.

"In the conditions of employment since the beginning of railroading, while the fireman has not been without benefit, there has, I think, inured to him a lesser proportion than to his associates. It is not the least of the merits of this design that for the same result his labor of coal handling will be lessened by more than one-third.

"The 'Horatio Allen' is today what the locomotive was when Zerah Colburn described it in the middle of the last century—a combination of three distinct arrangements. The source of power lies in the boiler and firebox; the cylinders, valves, pistons and the connections are the means by which the power is applied to produce motion within the machine; and the wheels, by means of their adhesion to the rails, enable the exertion of the tractive force, securing the locomotion of the machinery which impels them, and from their surplus power above what is necessary to move the locomotive alone, to haul also the great load behind it upon the rails.

"The 'Horatio Allen' epitomizes the relations of the three elements of that industrial organization which distinguishes our civilization from all that have preceded it. There have been many definitions of truth. The one that seems to me most adequate is that 'truth is things seen in relation.' Complex as are the relations of management, capital and labor in the wide expanse of industrial organization, I am confident that if we look steadily and clearly we can mark them out and define them. If we can see them, we shall see the truth and the truth shall make us free.

"This locomotive is a creation of management. The conception of the plan is basic, fundamental; and it is the organization, energy and direction of management that have given it effect.

"This locomotive is a depository of capital. It is a characteristic of wealth that its owners are in possession of real opportunities of consumption for speedy enjoyment, or of reservation for future enjoyment, or of employment for purposes of production. It is wealth that is reserved and applied to production under the direction of management that is generally called Capital, and this reservation demands on the part of the owner great sacrifice and force of character.

"But the 'Horatio Allen,' fine an example as it is of the art, striking as it is in its combination of management and capital, is a dead thing except in the hands of labor. He who looks with discerning eye to the contribution of labor, will fix his attention not on the output of physical energy, which in comparison with the power of this giant machine is but a feeble emanation, but rather on qualities far more ennobling—the complete discipline, the cheerful devotion to duty, the service carried on under every adverse circumstance, whether in wind and storms of rain and snow, or in fog, in the blackness of night or the beauty of the day; the high intelligence brought to the safeguarding, as well as the handling, of the movements entrusted to the charge of the locomotive's crew."

Engineers' Representative Talks Interestingly of Those who Serve at the Throttle

WARREN STONE, president of the Brotherhood of Locomotive Engineers, who had been invited but could not attend, was represented by S. H. Huff. Denying his right, on the basis of ability, to a place on the speakers' list, he nevertheless gave a most interesting talk which he prefaced with impressions made upon him by the locomotive during his boyhood days and also of his later experience as a locomotive fireman.

While yet talking reminiscently, he recalled the fact that in 1831, the Baltimore and Ohio Railroad company, according to history, offered a prize of four thousand dollars for a locomotive weighing the wonderful amount of three and one-half tons which would haul a load of fifteen tons at the rate of fifteen miles an hour on a level grade and how this prize was won by the "York," a locomotive built by the firm of Davis and Garton.

That there is a strong bond of comradeship between an engineer and his locomotive, he left no doubt when he said:

"To an engineer a good engine often means more than just a machine for hauling tonnage. They sometimes find, during the dark and gloomy hours of the night, as they speed through the country, something of a comradeship or friendship between themselves and their engine, as it throbs, sways, and glides around curves, riding herself gracefully on the tangent, and with a little stretch of the imagination it becomes almost human."

In sharp contrast, he declared:

"The engine as it stands, of course, means but little until the skilled hands of the engine crew apply its principles to the movement of tonnage and in that way we feel that the engineer and the fireman have contributed in a very substantial way to making the railroad the success it has been or to the development that has taken place in the railroad world. And with the spirit of co-operation that should exist and does exist, as a rule, between the management and the employes, I have in mind a co-operation to which both sides must contribute, that the future, no doubt, as in the past, holds in store a great deal more in the way of progress in railroading and locomotive construction."

Briefly he traced the history of his organization from the days of the Brotherhood of the Foot Boards down to the present, defined its principles

—Fidelity, Truth, Justice and Merit; and told of its benevolent activities. In explanation of its invasion of the banking profession he said that by so doing "it was hoped to inculcate into the minds of our people, and of working people generally, a desire to save or a spirit of thrift which part of their education seems to have been sadly neglected in the past." It was his impression that substantial progress already has been made in this direction.

Designer of the "Horatio Allen" Tells of its Many Possibilities

IT was a pleasure to COLONEL LOREE and his guests as well, that he was able to introduce the engineer who designed the "Horatio Allen," J. E. Muhlfeld. Delving for the moment into historical data, Mr. Muhlfeld said in beginning:

"The Delaware and Hudson Canal Company was the first to commercially recognize steam locomotive power on the American Continent and to actually put a steam locomotive on American soil. The 'Stourbridge Lion,' which had been ordered by Horatio Allen from the Foster Rastrick and Company's works of Stourbridge, England, reached the wharf of the West Point Foundry Works, foot of Beach street, New York City, on board the vessel 'John Jay,' on May 17, 1829, and after a short stay in New York was shipped up the North river to Rondout, N. Y., and thence by the Delaware and Hudson canal to Honesdale, Pa., and immediately set up by Allen. It was mounted on four wheels. In general appearance it looked like a gigantic grasshopper and weighed seven instead of three tons as had been agreed upon when ordered.

"The track of the Honesdale coal road consisted of six by twelve-inch stringers of hemlock, to which were spiked bars of one-half by three and a quarter-inch rolled iron, the stringers being supported on timber caps spaced about ten feet from center to center. The trestles were slender and the curves sharp.

"The 'Stourbridge Lion' was standing on the track 'smoking and hissing,' apparently anxious to distinguish itself. Allen was begged not to trust his life to the chance of the comparatively weak track and trestles holding up so monstrous a mass of wood, iron and steam. But Allen was lusty, courageous and ambitious, and, determined to see what the 'Lion' would do, alone on the engine, without any tonnage, he pulled the throttle valve wide open and let her go 'lickety split' around the curve, over the swaying trestle and out of sight of the cheering but apprehensive crowd.

"Shortly after the trial of the 'Stourbridge Lion,' Allen was engaged as chief engineer of the South Carolina road for which locomotives designed by him were built by the West Point foundry. He put his 'South Carolina,' the first double-end and the first eight wheel type locomotive in the world into use on that road in 1831. When running at night, Allen would place an open platform car ahead of the locomotive, this car being loaded with sand on which pine knots were burned to light the road ahead.

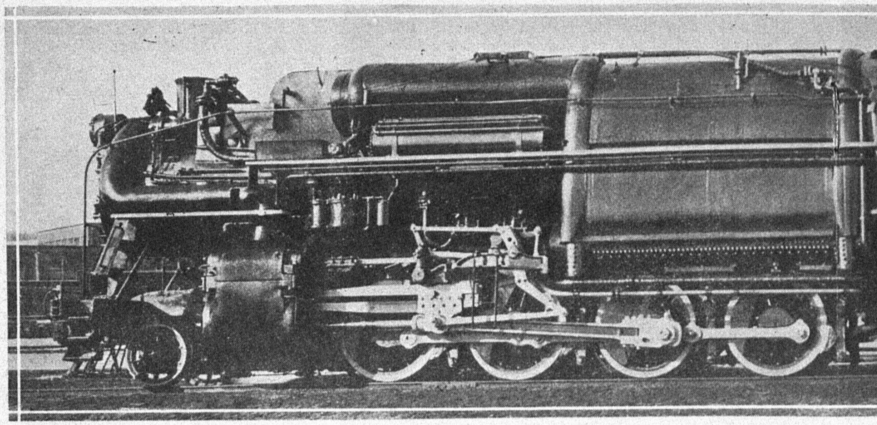
"Such were the experiences of Horatio Allen and of other of his colleagues—Ross Winans, Peter Cooper, George W. Johnson, James Milholland, Phineas Davis, Stacey Costell, Exekial Child, William T. James, and a long successive line of designers, engineers and builders, who had to do with the first use of steam motive power on the American railroads."

He then reviewed considerable data which reflected the deep and continued interest displayed and also the progressive action taken by PRESIDENT LOREE in improving the steam locomotive and steam road conditions in general. Thus he lead up to a general review of how the steam locomotives have been serving the country during the past fifteen years and, in explanation said:

"Comparing 1922 with 1907, while there was an increase of only 24 per cent in the total number of locomotives, there was an average increase of 44 per cent in their hauling capacity, due to average greater size and improved design and equipment. Furthermore, in combination with rectification of grades, larger cars and like factors, this 44 per cent increase in motive power moved an average of 70 per cent more revenue tons per freight train, and about 45 per cent more total freight ton miles, this being accomplished with a decrease of about 13.5 per cent in freight train mileage.

"It may be asked, why, with all these improvements in roadway, equipment and operation, did the operating ratio increase from 67.5 to 79.5 per cent, or about 18 per cent? The answer is, mainly through the revenue freight rate not having been increased to offset the greater cost of labor, materials and supplies, the principal item, after wages, being locomotive fuel.

"With regard to the locomotive fuel item, those costs went up about 160 per cent during the same period, or from approximately 200 to 518



THE "HORATIO

million dollars, the latter representing 127,213,345 tons of fuel consumed in 1922. In the New England district the cost for this fuel, in 1922, averaged $6.35, and for the entire United States, $3.94 per ton. Likewise, in 1922 it required, in the United States, an average of 163 pounds of fuel per 1,000 gross ton miles, and in New England, where the cost is the highest, this averaged 180 pounds.

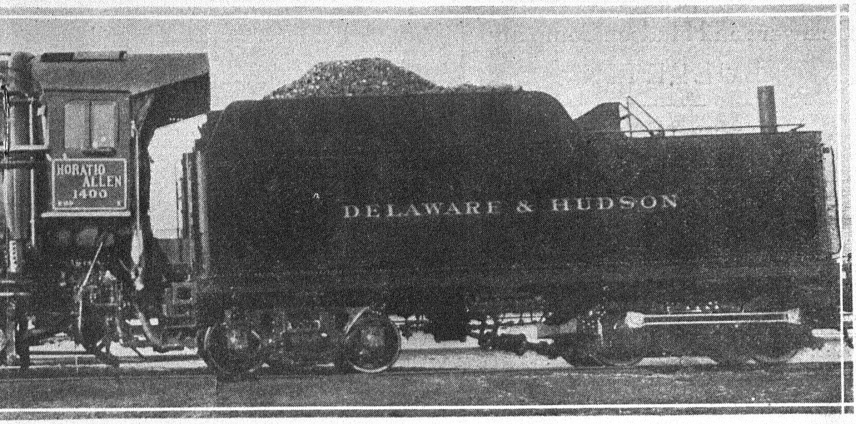
"As it now stands, the locomotive fuel bill is about equal to the total money that is paid in wages to engineers, firemen, shopmen, and enginehouse men engaged in the operation and upkeep of the locomotive equipment. Therefore, if freight rates are to be lowered, the locomotive fuel bill, which now represents considerably over one-half billion dollars per annum and about 12 per cent of the total steam railway operating expense is one of the large items that must be reduced, as any decrease in rates will have to be accomplished largely through an increase in the revenue freight train load and a reduction in the fuel consumption per 1,000 gross ton miles.

" Locomotives today must be designed, equipped and operated not only consistently, but economically. We must provide adequate starting power to readily get the trains out of the yard or siding without jerking; sufficient accelerating power to bring them quickly up to running speeds, plenty of sustained boiler and engine horsepower to keep them moving and reserve power to negotiate the ruling pulls. Likewise, the means for reducing speed and stopping is just as important.

" It is for these reasons that I favor a design of locomotive such as the 'Horatio Allen,' with plenty of 'pep' and reserve boiler and engine capacity that can be utilized for either starting, accelerating, or road running. An engineer always likes to have something 'up his sleeve' that will make him feel comfortable, when it comes to bad rail or weather, a hard start or pull, or a long continuous run, so that he can handle his train under all of these conditions, and know that the dispatcher can depend upon him to do so. The fireman also likes to know that the boiler has some reserve capacity so that when any little thing goes 'fluey' about the water level, pumping, quality of fuel, fuelbed, draft or firing, it isn't going to knock the boiler out of steam.

" The factor of upkeep is also a big one. Locomotives today must continue to move—not over a single division, but continuously over any number of divisions. The 'one-hundred-mile run' and then a cleaning, rest and repair period, is rapidly passing. It does not work in with the Transportation Act and the public demand for quicker traffic movement and lower passenger and freight rates. Therefore, the working, running and wearing parts must be designed with a higher factor of safety and made as simple, integral and sturdy as practicable so that they will not require constant attention, adjustment or repairs. Furthermore, all of the parts, especially those in contact with steam and water, should be made more accessible for inspection, testing and maintenance.

"Another thing that I have always felt most



RATIO ALLEN"

essential is to make the cab and tender arrangement as comfortable as practicable for the engineer and fireman, by locating and arranging the equipment they must continually handle in convenient positions. With the large steam locomotive this has become quite some job.

"There is nothing unusual in the 'Horatio Allen.' It has been designed to determine what can be accomplished in the better production and utilization of fuel heat and by means of higher steam pressure and the greater use of its expansive properties, in combination with the development of maximum hauling power in the most simplified form of a modern steam locomotive, consisting of two cylinders and four pairs of driving wheels.

"To illustrate: Assume that to convert a certain amount of water into steam at 200 pounds pressure, 1,199.2 pounds of coal must be used. To increase the 200 pounds pressure to 350 pounds, only 7.4 pounds more coal must be used and this increase of less than 6.2 per cent in fuel gives an increase of 150 pounds, or 75 per cent, in power. Then instead of using the steam of 350 pounds pressure direct from the boiler, in both the right and left cylinders and exhausting it out of the stack, it is first used in the right and again in the left cylinder, and by this double expansion process the heat that has been put into the steam is more effectively utilized before it is exhausted to the atmosphere.

"By this combination it is calculated that the saving in fuel consumption per unit of work done by the locomotive when working in compound gear, as compared with the ordinary single expansion cylinder locomotive, will be:

"1—The gain from increasing the steam pressure from 200 to 350 pounds will represent about 15 per cent less fuel consumed per drawbar horsepower hour.

"2—The gain through the double expansion of the steam will represent about 17 per cent less fuel consumed per drawbar horsepower hour.

"3—The gain from generating 75 per cent, instead of 40 per cent, of the steam at the firebox end of the boiler, in direct contact with water tubes and the radiant heat action on the same, in combination with improved circulation of the water and the more effective combustion and heat utilization—as compared with the ordinary radial stayed or Belpaire type of firebox with or without combustion chamber, syphons, or like equipment—will represent about 12 per cent less fuel consumed per drawbar horsepower hour.

"The total calculated saving, when working compound, therefore approximates 39 per cent of the fuel consumed by the ordinary single expansion steam locomotive per drawbar horsepower hour.

"The present day steam locomotive retains the fundamental features of the locomotives of almost a century ago, i. e., the water-leg firebox, multitubular type of boiler, single expansion cylinders, use of the exhaust steam for forced draft, and the general arrangement of cylinders, frames, valve

(Continued on Page 13)

The
Delaware and Hudson Company
BULLETIN

Office of Publication:
DELAWARE AND HUDSON BUILDING,
ALBANY, N. Y.

PUBLISHED semi-monthly by The Delaware and Hudson Company for the information of the men who operate the railroad, in the belief that mutual understanding of the problems all have to meet will help us to solve them for our mutual welfare.

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Vol. 5. January 1, 1925 No. 1

Study Employe Problem

FORWARD-LOOKING railroad employes, those in particular who appreciate the many possibilities of their profession, will be interested to learn that a movement is under way in an effort, so far as may be possible, to stabilize railroad employment. A committee recently appointed by the Association of Railway Executives, and which includes President L. F. Loree, is now hard at work on this problem.

Those who have been in the service for a number of years and who, therefore, are familiar with the many ups and downs of traffic which essentially is the barometer that governs all railroad problems in one sense or another, are conversant with the many intricate phases entering into such a study. If all the governing factors were within the control of railroad managements, a solution could be more easily arrived at. But, as it is, it is always the status of business in the country at large that makes conditions on the railroads either good or bad.

When there is a lull in the markets and in the manufacturing world, and even elsewhere, traffic movements suffer in consequence. Cars and locomotives are forced into idleness, train crews are laid off, shop forces must either be reduced or their working hours curtailed, and much the same policy is applied to the maintenance of way employes and to office corps.

A revival of business, on the other hand, often finds the railroads "short-handed" so to speak. More workers and more power are needed at once. Furloughed employes, men and women skilled in their work, the training of whom, sifted down to bare facts, has an actual monetary side, may not always be re-hired. Many of these, as often is the case, were valuable to the service and would have been glad to have continued in it for continuity of employment has its advantages both for employe and employer. It is in appreciation of these things that the study now being made, has been undertaken. Therefore, whatever its results may be, they will be welcomed by the employe as being of personal value.

Only a Dad

ONLY a dad with a tired face
Coming home from the daily race,
Bringing the little of gold or fame
To show how well he has played the game,
But glad in his heart that his own rejoice
To see him come and to hear his voice.

Only a dad with a brood of four,
One of ten million men or more,
Plodding along in the daily strife,
Bearing the whips and scorns of life
With never a whimper of pain or hate
For the sake of those who at home await.

Only a dad, neither rich nor proud,
Merely one of the surging crowd;
Toiling, striving from day to day,
Facing whatever may come his way;
Silent, whenever the harsh condemn,
And bearing it all for the love of them.

Only a dad, but he gave his all
To smooth the way for his children small,
Doing, with courage stern and grim,
The deeds that his father did for him;
This is the line that for him I pen,
Only a dad, but the best of men.

—*East Bay Journal.*

And Even So

Many years ago a famous steel man said:

"It is like this: pig iron is worth $15 a ton. Made into horseshoe nails that pig iron rises to $500 a ton. Made into steel rails the price is still higher. Turned into delicate watch springs that ton of pig iron is worth $250,000. So with your brain. Its value depends on how you handle it. The partly trained brain makes a living; the fully trained brain gets to the top.—*The Printing Art.*

The "Horatio Allen," No. 1400

(Continued from Page 11)

motion and running gear. The principal changes have been to increase the size and add numerous special appliances and accessories of considerable weight to promote capacity, efficiency and economy.

"The late war and the increased cost for coal and oil mining and distribution brought about the necessity for greater conservation and economy in the use of fuel. Likewise, the Transportation Act of 1920 emphasizes the importance of efficient and economical management, and reasonable expenditures for maintenance of way, structures and equipment. Public opinion also is continually demanding improved transportation service and lower rates, with particular reference to freight shipments.

"Next to wages, fuel is one of the railways' largest expenses. My contention has always been that a railroad should make every possible effort to reduce its fuel costs, and, in fact, its Transportation expenses as a whole, which represent immediate consumption, in order to provide the maximum amount of money for maintenance of way, structures and equipment, to keep the property in first class operating condition.

"Therefore, in order to assist in accomplishing these results through the use of 350 pounds of steam pressure, a substantially different type of locomotive boiler has been designed, the particular idea being to eliminate the usual stayed type of flat sheet firebox side and crown sheets and water legs, in combination with their sluggish circulation, and substitute self-supporting cylindrical containers, in line with stationary and marine practice. This has been accomplished in a very satisfactory manner, and a particular feature of the boiler design is the firebox, which contains almost 1,200 square feet of heating surface as compared with from 400 to 450 square feet in the largest combined fireboxes and combustion chambers of the usual locomotive boilers. In the latter, the firebox heating surface generally represents from 5 to 10 per cent of the total evaporation surface, whereas in the 'Horatio Allen', it represents about 37 per cent of the total. This enables taking greater advantage of the radiant heat of combustion for evaporation purposes and, as firebox heating surface ordinarily has about five times more steam-making capacity than that of the firebox tubes or flues, it provides for the production of about 75, instead of 40, per cent of the total steam at the firebox end of the boiler—where it can be most effectively and economically generated.

"Through the use of 350 pounds steam pressure, in combination with a reasonable degree of superheat, the steam can be effectively utilized in a double-expansion engine system. To illustrate more specifically; in order to produce the tractive power that can be obtained in the 'Horatio Allen,' exclusive of the tender truck booster, it would require, with 200 pounds pressure, the admission of direct pressure steam four times in one revolution of the driving wheels to two 28-inch diameter, single expansion cylinders, whereas in the 'Horatio Allen' live steam is admitted only two times in one revolution, to one 23½-inch diameter high pressure cylinder, and after its expansion in that cylinder and reduction to about ninety pounds back pressure, it is exhausted into a receiver and then admitted to a single 41-inch diameter low pressure cylinder, and further expanded to from five to seven pounds back pressure, at which pressure it is exhausted to the atmosphere. By this means the great loss in the single expansion steam locomotive—on account of the high cylinder back pressure and the extraordinary amount of superheat that is exhausted to the atmosphere—is substantially reduced.

"The other principal novel features are: the physical combination of the cylinders and front frames; removal of dry, branch and receiver pipes and superheater header from inside to outside the boiler and smokebox; more accessible location of intercepting valve outside of cylinder saddle; application of an interlocking duplex type of low and high pressure outside type of main throttle valve; installation of an automatic centrifugal type of saturated steam separator; an imperforate fire brick baffle wall for the full length and width of the firebox; a secondary superheater for the steam used by the auxiliaries, and a tender truck booster.

"The construction of the 'Horatio Allen' should give some very valuable information as to what can be accomplished in steam railway service through the use of a boiler design which more nearly approximates what is now being generally used in modern central power stations and marine installations. In my opinion, if we can eliminate from the present day general design of steam locomotives a lot of inaccessible and complicated running gear, machinery and accessory equipment that is now being applied to the axle loading to increase capacity and promote efficiency—and which correspondingly increases the indirect steam losses, cylinder back pressure, and internal friction—and obtain more direct power and economy through a greater utilization of the heat in steam of higher pressure, generated in a boiler which will dispense with the existing type of firebox and combustion chamber with its combustion and spark losses, scale and sediment collecting sheets, limited firebox heating surface, sluggish circulation, stayed radial and flat sheets, and numerous other parts subject to leakage, breakage and failure, we will have made substantial advance towards efficiency and in power per unit of engine weight.

"James J. Hill, who, in 1905, was one of the first railroad executives to adopt the Americanized design of Mallet locomotive, said that the improvements it had brought about in the steam locomotive would set back the electrification of the railways at least fifty years. The electrical engineers were then predicting that within five years, or by 1910, no more steam locomotives would be purchased on account of the so-called 'tractive effort, speed and length of run limitations' of the steam locomotive. However, since 1910, about 34,000 steam locomotives have been ordered by the railroads of the United States as compared to a total of about 65,000 steam and 450 electric locomotives now in use on all the Class I carriers. Furthermore, these 65,000 steam locomotives have increased in size from an average of 27,000 pounds tractive power in 1910, to 39,000 pounds at present, with a maximum in the Virginian Mallets of 176,000 pounds per locomotive. The electric locomotives in the United States will now average about 1,900 nominal horsepower and 150 pounds of weight per nominal horsepower, as compared with the 'Horatio Allen,' which at a speed of around thirty miles per hour will produce about 2,500 drawbar horsepower with an average of less than 140 pounds of engine weight per drawbar horsepower.

Mrs. Lewis, who Christened The "Horatio Allen," and President L. F. Loree

"As to the speed limitations of the steam locomotives, we all know that there 'isn't any such thing,' as the speed of the locomotive, if and when limited, is due to track, bridge and train conditions and requirements.

"It should also be remembered that steam locomotive operation can largely be controlled by two men in the cab of a self-contained mobile plant, whereas electric operation—as frequently demonstrated in the Greater New York district—is dependent upon the co-ordination and co-operation of a comparatively large and scattered amount of power plant, roadway and rolling stock supervision, operation, labor, machinery and equipment.

"It has often been said that the average steam locomotive engineman does not want 'big engines' and that he prefers the old 'tea pot.' That has not been my experience on any railroad, either in the United States or Canada, as the average railroad engineer and fireman take just as much, if not more, pride in being assigned to a new and modern piece of machinery, as any sationary power plant or steamship engineer, even with the usual 'baby troubles' and 'grief' that have to be gone through in the adoption of a new type of locomotive. To show the general interest already manifested in the 'Horatio Allen,' I quote a letter dated Cleveland, Ohio, November 17, 1924, from Assistant Editor John F. Welch of the Brotherhood of Locomotive Engineering Journal:

"'The new high pressure locomotive which you designed for the D. & H., is rather interesting and I am sure the readers of our publication would enjoy, as well as be benefited by an article on this subject."

"The real fact is, that with few exceptions, railway employes like to see their roads and equipment 'keep at the head-end and not at the tail-end of the procession.' Railroad men in general are of the most sterling and seasoned quality, as well as armor-clad and copper-lined. This is demonstrated daily by the manner in which the Nation's rail transportation, which includes the movement of all the necessities, conveniences and comforts of life, is being conducted.

"It is also demonstrated by the manner in which Mr. Edmonds, superintendent of motive power, and his associates, have taken a difficult task in a new and radical piece of machinery such as the 'Horatio Allen' and so successfully put it into commission.

"Before concluding my remarks, I wish to recall full tribute to J. H. Manning, former superintendent of motive power for The Delaware and Hudson Company, and to Consulting Engineers Frank J. Cole and C. J. Mellin of the American Locomotive Company, who were of great assistance in working out the details of the 'Horatio Allen,' and all of whom I very much regret have since passed on to their great reward."

Timothy Shea, in Behalf of the B. of L. F. & E., Pays High Tribute to Railway Employes

TIMOTHY SHEA, assistant president of the Brotherhood of Locomotive Firemen and Enginemen, next was introduced by COLONEL LOREE. He was quick to express his appreciation of the opportunity afforded him to participate in the exercises of the day and then for a time talked reminiscently of his earlier days as a locomotive fireman and of his promotion to an engineer. In quite some detail, he then told of what a close study of the human element in railroad service had proven to him and his associates and described the plan of protection against the possibility of certain disabilities that had been established by the organization he represented. His concluding remarks were in the nature of a tribute to the loyalty of railroad employes and prophetical in relation to the future of the steam locomotive. He said:

"Railroad employes have the interest of the general public in charge to a greater extent than possibly any other workingmen and the general public should show greater interest in promoting their general welfare, affording greater security to life and limb and the fullest protection of their rights as citizens.

"With modern inventions and rapid changes and the introduction of electricity as motive power to handle trains on some roads under certain conditions we hear much about the displacement of the steam locomotive. This may come in time, but to my mind it is a long way off as something very practical must be introduced to do away with the locomotive which has done so much to establish railroad transportation service throughout the continent.

"The 'iron horse,' better known as the locomotive, has played its part in the great American drama and will take its place in national history as one of the outstanding achievements of modern engineering.

"We are now approaching a new year—a time when we should exchange greetings and good will to all. May I express the hope before closing that the coming year will bring greater prosperity and happiness to all railroad workers, officers, and the railroads than ever before. Good treatment as between man and man, whether he be officer or employe, will go a long way to accomplish this end."

Builders of the "Horatio Allen" Defend the Steam Locomotive as Against its Electric Rival

IN introducing the next speaker, COLONEL LOREE said:

"I think very often as we look over advertisements in the magazines and books and read the names of large or small corporations, we fail to realize the elements of that corporation. We fail to visualize the great number of human beings, men and women, whose co-ordinated efforts are really the heart and soul of the corporation. Much has been said today of the designing of the 'Horatio Allen' and of the men who in the future will operate it and I think there are others to whom we should give a thought and that is the great number of men engaged in the construction, the men who as loyally and as courageously as any of the others have devoted themselves inspiringly to that work."

It was with pleasure that he then introduced J. G. Blunt, representative of the American Locomotive Company, the builders of the 'Horatio Allen.' He was present in place of Mr. Ennis, president of his company, who was detained at home by illness, and read the notes Mr. Ennis had prepared, which were, in part, as follows:

"As we look at this new unit of motive power, those of us familiar with the development of the locomotive, will without doubt admit that in all its fundamentals, it is very similar to the original 'Stourbridge Lion,' introduced by Mr. Allen. True—it is much larger, more powerful, but the motive fluid is the same, generated and applied in much the same manner. We wonder for a moment, just what progress we have really made in a century's time.

"Advocates of electric power for railroad transportation, as well as stationary power plant engineers, point with pride to some of the records of their achievements, and for some time have scornfully told of the inefficiency and wastefulness of the steam locomotive. Notwithstanding all these criticisms, the steam locomotive continues to haul the railroad traffic of the country, is constantly doing it more economically, and for many years to come will continue to do so. It is true that the thermal efficiency of the steam locomotive is not high, but it is steadily improving, and no one of experience dares say that the limit has been reached, or that all possibilities of improvement have been exhausted.

"The steam locomotive has always been handicapped by conditions existing outside of the machine itself. Even the 'Stourbridge Lion' was too heavy for the rails. Today we find ourselves limited as to weight—we are confined within certain dimensions of height, width and length, none of which are ample—and all because we have a moving power plant, that must be available under all conditions of weather, and that must move over any part of the railroad system on which it operates.

"The stationary power plant is seldom limited by material conditions as to size. Usually there is ample room for it and the boiler with its firebox can be made just as large as its designer desires. It is kept in a building especially designed for it, where it will be snug and warm, and it is never called upon to go out on a cold stormy night and make a division.

"Steam locomotives, handicapped as they are, in service today, show 3000 to 3500 horsepower within a cross sectional area of 160 square feet. This means a boiler and firebox above the wheels, within the height of fifteen and a half feet, and not over ten and a half feet wide, that will produce and maintain this horsepower.

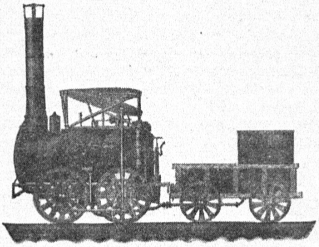
"The 'Stourbridge Lion' had a small firebox and grate, yet in proportion to work done it was much larger than in the locomotive before you.

"Where else than in the steam locomotive do we find three thousand indicated horsepower produced from only seventy square feet of grate area? And yet with these necessarily high rates of combustion, the coal rates are not abnormally high. At lower rates, the steam locomotive will compare very favorably with modern stationary plants. Now, condensing locomotives are producing an indicated horsepower for one hour on two pounds of coal. Even at the drawbar they give a horsepower for two and one half pounds. Where else do we find such records along with such severe conditions. Locomotive designers are confronted as never before with limitations that absolutely prevent economies otherwise possible, but even so are not discouraged, but confident that there is yet opportunity for refinement and further progress.

"But it is not necessary that we defend the locomotive today. Its record stands and it has been a faithful servant.

"We are here for two purposes. The first is to honor that able engineer, Horatio Allen, who foresaw the future of rail motive power of the country for a century ahead, and whose judgment was respected by The Delaware and Hudson Company to the extent that they placed it in his hands to select and supervise the installation of the first steam locomotive for its railroad.

"But we are here also to congratulate you, Mr. Loree, and your associates, not only on this excellent piece of machinery that stands before you, but on the foresight and progressiveness that made this possible. This is not the first contribution of much value that you have made toward economies in railroad operation, and you have always shown a keen desire to advance the art of railroading.



THE "STOURBRIDGE LION"

"The new 'Horatio Allen' is a daring piece of engineering. It utilizes a higher steam pressure than ever used before on locomotives in this country. The boiler design is therefore novel, and the test results of this locomotive will contribute data, heretofore unavailable, that will widen our knowledge considerably. The locomotive, itself, is a step forward. We are proud to be associated with you in the development of this work. We claim no credit, excepting that due to an honest effort to give good workmanship and material.

"For whatever this locomotive accomplishes—for its advanced design, you and your associates are responsible, and to you the credit belongs."

"The Locomotive is the Heart of Transportation," Declares I. C. C. Inspector Pack.

A. G. PACK, chief inspector, Bureau of Locomotive Inspection of the Interstate Commerce Commission, was the last speaker. The christening of the 'Horatio Allen' he commended as a worthy tribute to the one who did so much in the interest of transportation and of civilization.

"The locomotive," he said, "is the heart of transportation, therefore, the heart and soul, so to speak, of our present railroad system; without locomotives in good condition the railroads cannot properly function.

"About one hundred years ago the stage coach, horse-drawn wagon, canal boat, and sailing ship were the only means of transportation which was of necessity slow and cumbersome. Cities and communities in those days were dependent upon the immediate surrounding country for food and the necessary comforts of life. Today every village and every hamlet draws the things necessary in bringing comfort and happiness from the entire world. This has been made possible by the evolution of transportation methods from the ox-drawn cart and the stage coach to the complete, complex and remarkable railroad systems.

"The evolution of transportation methods and of the remarkable railroad systems has been wonderfully rapid and perhaps no single individual has contributed to the development of the locomotive and of the railroads than did Horatio Allen. History records the fact that he went to England to study the locomotive and how later he operated the 'Stourbridge Lion,' the first locomotive ever put in use on the American continent. His description of the memorable run seems to reflect his courage and ability, which I do not believe can be better described than by using his own language:

"'The line of road was straight about 600 feet, being parallel with the canal, then crossing the Lackawaxen creek, by a curve nearly a quarter of a circle long, of a radius of 750 feet, on trestle work about thirty feet above the creek and from the curve extending in a line nearly straight into the woods of Pennsylvania. The road having been built of timber in long lengths, and not well seasoned, some of the rails were not exactly in their true position. Under these circumstances the feelings of the lookers on became general that either the road would break down under the weight of the locomotive, or if the curve ahead was reached, that the locomotive would not keep the track, and would dash into the creek with a fall of some thirty feet. When the steam was of high pressure, and all was ready, I took my position on the platform of the locomotive alone and with my hand on the throttle-valve said: If there is any danger in this ride, it is not necessary that the life and limb of more than one should be subjected to danger, and felt that the time would come when I should look back with great interest to the ride then before me. The locomotive having no train behind it, answered at once to the movement of the valve; soon the straight line was run over, the curve was reached and passed before there was time to think as to its being passed safely, and soon I was out of sight in the three miles ride alone in the woods of Pennsylvania.'

"Through the geniusness of men, things miraculous have been accomplished as if directed by the hand of Providence. Almost within the memory of the present generation the number of locomotives have increased from nothing in the Continental United States of America to over 70,000, and the railroad trackage has increased from nothing to over 265,000 miles of main line upon which are employed more than 2,000,000 men and women.

"From the 'Stourbridge Lion,' with its cylinders of seven and a half inches in diameter and its tractive effort of a few hundred pounds, locomotives developed until today we have before us this mighty machine, now being christened in the name of 'Horatio Allen' and in honor of his memory, carrying 350 pounds steam pressure, using it expansively and the second time before it is finally released and lost, and which develops 70,000 pounds tractive effort working compound, and 90,000 pounds working simple

"Who knows but what future generations will continue this great progress until our methods and practices may seem as antiquated and as far out of date as we now view the railroad and locomotive construction as in the days of the 'Stourbridge Lion.'

"Every man who performs service on the railroads is contributing something to their development and to the advancement of civilization, therefore, we should perform our tasks, whatever may be our lot, to the utmost of our ability and with a single eye to the purposes to be accomplished.

"The world will not stand still; progress cannot stop; it must advance or retrogress. As long as man continues to be a restless being and is ambitious to serve a more useful purpose in life, radical changes will be developed that will change their entire line of thought and action as they have in the generations gone by. It is through the exchange of ideas and experiences that has developed and will continue to develop the best there is in the human brain. It is through association with the people in the different walks of life and in the different climes that we learn of their ambitions and desires and arrive at a better understanding of their aims and objects.

"Such occasions as we are today privileged to enjoy are of value only when they serve to imbue men and women with the desire to accomplish bigger things and render greater service. The christening of this locomotive and dedicating it to the service of mankind will be recorded in history and future generations will profit by our experiences. Therefore, let us expect that the fondest hopes of its designers and builders may be fully realized that our children and children's children may continue to advance."

Name Tower After Conductor

THE first signal tower on the Pennsylvania railroad to be renamed in honor of a living employe, has just received its new designation. The tower controls an important system of interlocking switches and signals at the junction of the Maryland division's main line with the Shellpot branch, about three miles south of Wilmington, Delaware. Its designation has been indicated by the telegraphic initials, "PJ." Hereafter it will be called "Ragan" to commemorate permanently the long, faithful and efficient services of Lewis W. Ragan, oldest passenger conductor in point of service on the division. He has served the company for more than fifty-one years. Starting as a messenger boy at Washington, he rose by one step and another until promoted to a passenger conductor on March 1, 1881.

Would Preserve Saratoga Battlefields

The next legislature in New York State will be asked for an appropriation to cover the purchase and improvement of the Saratoga battlefields, according to a recent announcement made by the Saratoga Battlefield Association. The Association, incorporated last year, has approximately 400 acres of land where the principal fighting in the battle of Saratoga took place. The State will be asked to make this tract a part of its park system. Under such an arrangement, $500,000 of the $15,000,000 park bond issue recently approved, would be available for purposes to which the Association might wish to apply it.

Clicks from the Rails

Just think—

* * *

What our country—

* * *

Might be today without—

* * *

Its great network of railroads.

* * *

Where there are railroads, there you will find our industries; cities and thriving villages likewise dot their course. Where else do you find these conditions?

* * *

Cornelius Vanderbilt, Jr., has announced plans covering the construction of a railway across the Everglades from Miami, Fla., to Fort Meyer. The young man is, indeed, emulating his ancestors.

* * *

The Detroit, Toledo & Ironton, in pursuance of an intensive Safety First policy, has established a rule requiring that when cars are being pushed, particularly in yards and on industrial tracks, a brakeman must be stationed on the leading car, and he must have a mouth whistle. The same rule applies when yard engines, either pulling cars, or without cars, are moving backward, the brakeman must be on the footboard of the tender.

* * *

Two new railroad systems are to span the Alps. One will follow a route over the Stelvio Pass, connecting Tirano and Bormio, in Italy. with Landeck, in Tyrol. The other will be built over the Fern Pass from Garminschbruck in Tyrol and a company with $3,000,000 capital has been organized to handle this undertaking. When the two railways are finished, Munich and Milan will be a two-hours' journey nearer together.

* * *

Some idea of the enormous increase in the cost of producing transportation can be gained from the fact that even now, after all the successful efforts of economy, wages, coal, material and supplies, and practically everything else which enters into railway maintenance and operation, are at least 100 per cent higher than they were nine years ago. Eight per cent of every freight rate in 1924 went to pay taxes alone.

* * *

South African railways combat the problems of drifting sand in an unique way, said to have originated in France. They "hold down" the sand until vegetation has taken root by running cars of city garbage to side tracks in the vicinity and spreading their contents over the road bed to a depth of two or three inches. This prevents the sand from drifting and fertilizes it. Seeds are sown and in the course of time grass appears.

English and American Tool Builders

(A Review of a Book By JOSEPH WICKHAM ROE)

(Continued from Last Issue)

PROBABLY the most unusual industrial development in America is that of the brass business in the Naugatuck valley, located in the western part of Connecticut. In a narrow district about thirty miles long, 80 per cent of the rolled brass and copper and finished brass wares of the United States are made, representing an output of $80,000,000 a year.

The development of the brass industry here is due to peculiar circumstances, and partly because the western supply of copper had not begun until years after the industry was well established in this location.

The Revere Copper Company began rolling copper in Massachusetts in 1801, and the Soho Copper Company in Belleville, N. J., in 1813.

The brass business of Connecticut had its origin with Henry Grilley of Waterbury, who began making pewter buttons there in 1790, and later, in 1802, began making brass buttons.

About 1820, James Croft, a brassworker from England, joined the industry, and on his advice two of the firms began to do their own rolling. Machinery, men and methods were imported from England, so that by 1830 the business was well past the experimental stage. The raw material was originally scrap copper, following which copper was imported until 1850, when western copper was produced. All the zinc was imported until about 1870.

Hiram W. Hayden, about 1840, invented the spinning process, which revolutionized the industry.

Israel Holmes, in 1830, imported men and machinery from England and began the manufacture of wire and tubing, later becoming one of the leading personalities of the industry.

A number of prolific inventors developed with the industry, among whom are L. J. Atwood, L. S. White and W. N. Weeden.

Connecticut leads all the other states in the number of patents per person of population, and the brass industry has contributed greatly to the number of patents. The brass business requires highly developed machinery, and much of it is of special design. The result is that a great deal of the machinery of that business is designed and built in the factories where it is used. The tool equipment is wonderfully complex and much of it has never been made public. Very little of their machinery is of standard design, with respect to machines of other industries.

Therefore, the author in his book does not give any details as to the machinery used or its development.

Although the machine tool industry began in New England, Philadelphia later took first place as the largest tool building center in the country. The development there was greatly influenced by William Sellers and William Bement, two brilliant mechanics.

Other distinguished inventors were Godfrey, Rittenhouse, Franklin, Evans, Fulton and Fitch.

Of these, Oliver Evans seems to have affected modern manufacturing methods the most. He was born in Delaware in 1755 and, in 1777, invented a card machine. In 1785, he built a flour mill in Delaware in connection with which he started an investigation of and made improvements that form the basis of the modern methods of handling materials while in the process of manufacture. Vertical and horizontal conveyors, spiral conveyors and similar machinery were nearly all developed by him. He became interested in the steam engine and built quite a number of them, developing the advantages of the high pressure engine.

In 1810, Alfred Jenks moved to Pennsylvania to manufacture textile machinery, later moving to Philadelphia. By 1825, he had equipped most of the thirty mills in and around the city. He also equipped the first woolen mill built in the state.

William Sellers was born in Pennsylvania, in 1824, and has been called the Whitworth of America, as there is great similarity in the work and influence of these two men. In 1848, he began to make machine tools and mill gearing. He was shortly joined by Edward Bancroft, who was the inventor of the firm, the designing ability of Sellers not having developed until after the death of Bancroft in 1855. His first patent was granted in 1857 and he later took out about ninety, which cover machine tools of all kinds, rifling machines, riveters, boilers, hydraulic machinery, hoisting cranes, steam hammers, engines, ordnance, turntables and other devices. He invented and introduced the injector of his name. One of his best known inventions is the Sellers spiral geared planer, patented in 1862. He was one of the first to do away with fancy designs and unnecessary trimmings of machinery and also to build his machines with heavier frames.

In 1864, he read a paper on "A System of Screw Threads and Nuts," embodying the 60-degree angle and a flat of one-eighth the pitch at the top and bottom of the thread. This was an improvement on Whitworth's 55-degree angle and rounded threads, and he also suggested standards for bolt heads and nuts. Ultimately, his standards were universally adopted, as follows:

U. S. Government	1868
Penn. R. R.	1869
M. C. B.	1872
International Congress ..	1898

In 1873, he organized the Midvale Steel company and it was there that Frederick W. Taylor began, in 1880, his work on the art of metal cutting, which brought forth high speed tool steel and a general re-design of machine tools. This work covered twenty-six years and cost $200,000.

Dr. Coleman Sellers, a second-cousin of William Sellers, was born in 1827, in Philadelphia. When nineteen years old he went to work in the Globe Rolling mill at Cincinnati, which was operated by his elder brothers. The first locomotives for the Panama railroad were built there and in two years he became superintendent.

In 1851, he became foreman of the plant of James and Jonathan Niles, locomotive builders of the same place. In six years, he went as chief engineer to William Sellers & Co., Philadelphia, and remained with them for thirty years. During these years he designed a wide range of machinery, especially machine tools for railway use. The Sellers coupling did much to bring about modern systems of power transmission. Further details of the tools, however, is not given by the author.

William B. Bement was born in Bradford, N. H., in 1817. After a varied career having to do with manufacturing and machinery, including employment with the Amoskeag company and the Lowell Machine shop under William A. Burke, he moved to Philadelphia in 1848 where he went into business for himself. His firm gradually developed into the Niles-Bement-Pond company. Bement worked out many improvements in machine tools and one of his men, Frederick B. Miles, invented the Bement steam hammer.

Matthias W. Baldwin was born in New Jersey and began work as a jeweler's apprentice. With David W. Mason, he went into the business of making book-binding tools which gradually led to the making of machine tools, hydaulic presses, steam engines, and finally locomotives. In 1830, Baldwin built a model locomotive for the Peale Museum on account of which he received an order for a locomotive from the Philadelphia & Germantown railroad. Baldwin completed it in 1832 and, in 1833, it was placed in service. In this way the Baldwin Locomotive Works began. In 1834 they built five; in 1835, fourteen; in 1836, forty. Locomotive number (manufacturer's number) 1000 was built in 1861; number 5000 in 1880, and in 1913 the forty-thousandth was built. Bement and Sellers who specialized in railway machinery, and other neighboring tool makers, were, of course, influenced by the development of the locomotive works.

The Southwark foundry was established in 1836, first as a foundry, then as a machine works also. The owners were S. V. Merrick who became the first president of the Pennsylvania railroad, and John Henry Towne, whose son was one of the organizers of Yale & Towne, the lockmakers of Connecticut.

The Southwark foundry introduced the steam hammer into this country under arrangements with James Nasmyth. They built the engines of the "Princeton," the first man-of-war propelled by a screw.

Hugo Bilgram, an expert mechanic, of Philadelphia, has in recent years, as head of the Bilgram Machine works, made valuable contributions to the art of gear cutting.

The Landis Tool company, grinding machine builders, began as Landis Brothers, in 1890. One of the brothers became interested in grinding machinery for use in their shop, the result of which was the development of the Landis grinder.

Several minor establishments are mentioned but without reference to any inventions or other developments that might have contributed to the art.

(To be Concluded in Next Issue)

What is Success?

It isn't the cut of the clothes that you wear,
Nor the stuff out of which they are made,
Though chosen with taste and fastidious care;
And it isn't the price that you paid.
It isn't the size of your pile in the bank,
Nor the number of acres you own;
It isn't the question of prestige or rank,
Nor of sinew of muscle nor bone.
It isn't the servants that come at your call,
It isn't the things you possess,
Whether many or little, or nothing at all—
It's service that measures success.

It isn't a question of name, or of length of an
ancestral pedigree,
Nor a question of mental vigor or strength,
Nor a question of social degree.
It isn't a question of city or town;
Nor a question of doctrine or creed;
It isn't a question of fame or renown,
Nor a question of valorous deeds;
But he who does something of worth every day,
Giving pleasure or sharing distress,
Will find satisfaction the richest pay
For it's service that measures success.